



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of:

Johannes MANTEN

Application No.: 09/762,386

Filed: February 28, 2001

Docket No.: 108518

For: CUT-RESISTANT ARTICLES OF ARAMID MICROFILAMENTS

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DEC 03 2003
TC 1700

BRIEF ON APPEAL

Appeal from Group 1771

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I. INTRODUCTION

This is an Appeal from the Office Action mailed September 10, 2003 finally rejecting claims 1-3 and 5-7 of the present application.

A. Real Party In Interest

The real party in interest for this Appeal in the present application is TWARON PRODUCTS, GMBH, which received title by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 011766, Frames 0003.

B. Statement of Related Appeals and Interferences

There are presently no appeals or interferences, known to Appellant, Appellant's representative or the assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

C. Status of Claims

Claims 1-3 and 5-7 are pending and are on appeal. Claims 1-3 and 5-7 stand rejected as discussed further below. A copy of the claims on appeal is set forth in the attached Appendix.

Claim 1 is an independent claim from which claims 2, 3 and 5-7 depend either directly or indirectly.

D. Status of Amendments

No Amendment After Final Rejection Under 37 C.F.R. §1.116 has been filed.

II. SUMMARY OF THE INVENTION

The present invention relates to cut-resistant articles made of aromatic polyamide microfilaments having a titer equal to or smaller than 1.3 dtex.

As explained in the Background section of the present specification, it is known that cut-resistant articles can be made of aromatic polyamide (polyaramid) fibers. See page 1, lines 8-18. However, the present inventor surprisingly found that cut-resistance can be

increased and wearer comfort improved by utilizing polyaramid microfilaments having a titer of 1.3 dtex or less in place of such conventional polyaramid fibers of greater titer. See pages 3 and 4 of the specification.

The microfilaments of the inventive cut-resistant articles are aromatic polyamide (polyaramid) that may be any aromatic polyamide, such as obtained by the polymerization of an aromatic diamine and an aromatic di-acid chloride. More preferably, the aromatic polyamide may be para-aromatic polyamides, and most preferably, poly (para-phenylene terephthalate) (PPD-T), which can be obtained from p-phenylenediamine and terephthaloyl chloride. See page 2 of the specification.

The surprising advantages with the use of microfilaments having a titer of 1.3 dtex or less over the use of standard fibers of greater titer is illustrated in the examples and comparative examples on pages 3-5 of the specification. There, it is established that articles of the invention made with microfilaments are unexpectedly improved in both comfort (page 3, lines 1-7) and cut resistance/strength (page 5, lines 1-3 and Tables on pages 3 and 4) compared to standard fibers having a titer of 1.7 dtex.

III. THE APPLIED REFERENCE

U.S. Patent No. 6,103,371 to Prickett et al. (Prickett)

IV. ISSUE

The only issue on appeal is whether the subject matter of claims 1-3 and 5-7 is anticipated under 35 U.S.C. §102(e) under Prickett.

V. GROUPING OF CLAIMS

The rejected claims are all grouped together. Thus, the claims stand or fall together.

VI. ARGUMENTS

Claims 1-3 and 5-7 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 6,103,371 (Prickett).¹

The cut resistant article as defined in claim 1 includes aromatic polyamide microfilaments wherein the titer of the microfilaments is equal to or smaller than 1.3 dtex (1.3 x 10⁻⁴ g/m).

As an initial matter, the terms "microfilament" and "dtex" are explained, as these terms are quite significant with respect to this rejection. As well understood in the art, "dtex" is a unit referring to the linear weight of a textile filament, with 1 dtex equaling 0.0001 g/m. "Microfilaments" as used herein refers to filaments having a titer of 1.3 dtex or less. Microfilaments thus have a very small diameter, particularly as compared to standard yarn fibers of larger diameter. This is confirmed throughout the present specification, where it is detailed that standard fibers have a titer of more than 1.3 dtex, e.g., at least 1.7 dtex. See page 3, lines 1-7 and page 4, lines 1-3 of the present specification. Microfilaments as used in the present invention are thus quite distinct from standard fibers of greater titer.

A. Prickett Teaches Away From The Claimed Invention

Prickett teaches away from the claimed invention. Specifically, Prickett teaches the use of para-aramid staple fibers having a linear density of 3 to 6 dtex. (See col. 3, lines 44-50 of Prickett), and teaches away from using fibers having a linear density smaller than 3 dtex. According to col. 3, lines 54-55 of Prickett, fibers of less than about 3 dtex may not yield the improved cut resistance of the invention taught by Prickett. Rather, Prickett teaches that fabrics made from para-aramid fibers having a linear density of 3 to 6 dtex will deliver

¹ In a telephone conversation with the Examiner on November 12, 2003, the Examiner confirmed that the Amendment filed on April 21, 2003 had been entered, and thus claim 4 is canceled. The Examiner confirmed that the rejection should have recited that claims 1-3 and 5-7 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,103,371.

improved cut resistance due to the increased fiber linear density, and will maintain comfort due to the decreased yarn twist. See col. 3, lines 47-50 of Prickett. Accordingly, Prickett teaches that using fibers having a linear density smaller than 3 dtex does not result in the desired cut resistance.

Thus, Prickett teaches the use of fibers having individual linear densities that are higher than what has been used in the past, whereas the present invention uses microfilaments having lower linear densities than what has been used in the past.

B. Prickett's Description of "Prior Art" Also Does Not Anticipate The Claimed Invention

Further, Prickett's description of the "prior art" does not anticipate the claimed invention. The Examiner relies on Prickett's description of the use of allegedly known fibers with a linear density \leq 2.5 dtex as anticipating the invention. However, Appellant again emphasizes that Prickett here is describing a prior use of fibers with a linear density \leq 2.5 dtex, not microfilaments having a titer \leq 1.3 dtex, as required in the claimed invention. Nothing in the description of the prior art in Prickett teaches or suggests the use of microfilaments having a titer of $<$ 1.3 dtex. This aspect of Prickett thus also fails to anticipate the present claims.

Further, although Prickett does not disclose what is meant in referring to fibers having a linear density less than 2.5 dtex, the examples disclosed by Prickett include the use of fibers having linear densities no lower than 1.67. As such, one of ordinary skill in the art would understand that Prickett here is clearly referring to standard staple fibers having a dtex of 1.67 (1.7) or more. Here again, a teaching of using staple fibers having a linear density of \leq 2.5 dtex or less, e.g., 1.67 to 2.5, teaches nothing regarding the use of microfilaments having a titer of 1.3 dtex or less.

C. The Range In Prickett is too Broad to Anticipate The Claims

Moreover, the disclosed range of linear densities that are ≤ 2.5 dtex, as taught by Prickett, is too broad to anticipate the present claims.

As explained in MPEP §2131.03, when the prior art discloses a range which touches, overlaps or is within the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. "If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims."

The dtex range of ≤ 2.5 as disclosed by Prickett is nearly twice as large as the dtex range of ≤ 1.3 required in the present claims, and thus is clearly significantly broader than the range in the present claims. Further, Prickett has no mention of values within the much smaller claimed range. The smallest value mentioned in Prickett is 1.67 dtex, well above the 1.3 dtex maximum value of the present claims. Still further, the range of the present invention achieves unexpected results compared to the broader range of Prickett, as discussed more fully below. There is no basis to conclude on these facts that the teachings of Prickett anticipate the claimed invention. That is, Prickett cannot be found to describe the claimed range with sufficient specificity to anticipate the claimed range.

In summary, Prickett cannot be found to properly anticipate the claims, at least because (a) the prior art range described by Prickett is too broad to establish an anticipation

rejection, (b) Prickett discloses no specific values within the claimed range, and (c) there are unexpected results associated with the present range as compared to the range of Prickett.

Accordingly, Prickett might at best only establish an obviousness position under 35 U.S.C. §103(a). However, this position also must fail as detailed below.

D. The Present Invention Also Would Not Have Been Obvious From Prickett

1. Unexpected Results

According to Appellant's disclosure, higher tensile strength microfilament yarn is responsible for improved cut resistance of fabrics made from microfilaments. The strength is considerably improved for microfilament fibers over standard fibers of higher dtex.

A standard yarn has a filament titer of 1.7 dtex, as illustrated in the specification. See, e.g., the comparative examples. As disclosed in the specification, the performance of a microfilament yarn (0.93 dtex) of the invention is better than standard yarn (1.7 dtex). See the Table on page 3 of the specification. "Moreover, the knitted fabrics based on microfilaments are much softer and have a finer 'hand' than comparable fabrics based on standard fibers with a count of 1.7 dtex." (see page 4, lines 1-3 of the specification).

The comparative examples in the present specification use a standard filament titer of 1.7 dtex, and thus use a linear density that is equivalent to the smallest fiber described in Prickett (1.67 dtex fiber). The examples disclosed in the present specification use of a microfilament having a titer as low as 0.93 dtex.

In the Tables on pages 3 and 4 of the present specification, strength and cut resistance were evaluated for comparative standard fibers having a titer of 1.7 dtex and for microfilaments of the invention having a titer of 0.93 dtex. The results in the Tables show (1) that the strength is considerably improved for the microfilament yarns and (2) that the cut resistance (represented by the smallest index) of the microfilament yarn is better than the cut resistance of a standard fiber, such as disclosed in Prickett.

Thus, unexpected results for the claimed range of the present application, as confirmed by the results on pages 3-5 of the specification, clearly show wearer comfort and strength/cut resistance improvement with microfilaments having linear densities within the range of ≤ 1.3 dtex when compared to a standard fiber having a linear density of 1.7 dtex, such as described in Prickett.

Accordingly, the present claims should not be found obvious in view of Prickett.

2. Prickett Teaches Away

Under 35 U.S.C. §103(a), a patent may not be obtained if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. See MPEP §706.02. As discussed above, Prickett teaches away from using fibers having a linear density smaller than 3 dtex, as in the present invention. Thus, Prickett could not have rendered the present claims obvious.

More specifically, the claims cannot be properly found to have been obvious in view of Prickett because (a) Prickett teaches away from the range recited in the present claims and thus would not have led one to modify the prior art range to select values within the present range, and (b) unexpected results have been demonstrated when using microfilaments within the present range as opposed to using fibers being within the broader prior art range described in Prickett.

E. Conclusion

For the foregoing reasons, Applicant respectfully submits that Prickett fails to anticipate, or render obvious, the subject matter of claim 1 or claims dependent therefrom.

VII. CONCLUSION

For all of the reasons discussed above, it is respectfully submitted that it would not have been known or obvious to a person of ordinary skill in the art, at the time the invention was made, to make the subject invention from the teachings of the reference relied upon by the Examiner. Appellant respectfully requests that this Honorable Board reverse the rejections of claims 1-3 and 5-7.

Upon reversal and/or remand, Appellant respectfully requests that German references DE 297 13 824 U1 and DE 44 23 194 A1, first cited in an Information Disclosure Statement filed May 23, 2001, be considered by the Examiner and acknowledged as having been considered. In the Final Rejection, the Examiner still refuses to make German references DE 297 13 824 U1 and DE 44 23 194 A1 of record because allegedly no English Abstract or version of the references was provided. The Examiner's refusal is improper.

DE 297 13 824 U1 is discussed in the specification. Specifically, the specification recites it "is known that cut-resistant articles can be made of aromatic polyamide (polyaramid) fibers. In DE 297 13 824, a protective glove has been described the lining of which comprises flexible aramid fiber". See page 1, lines 8-10 of the specification.

DE 44 23 194 A1 was cited in a counterpart foreign application, and an English language version of the foreign search report was submitted, which search report clearly indicated this reference to be a category X reference.

As explained in MPEP §609 C(2), information that complies with the requirements under 37 CFR §§1.97 and 1.98 but which is in a non-English language is to be considered in view of a concise explanation submitted (either separate from the specification or incorporated therein) and insofar as it is understood on its face, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches. As explained in MPEP §609 A(3), where the information listed is not in the

English language, but was cited in a search report or other action by a foreign patent office in a counterpart foreign application, the requirement for a concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office. This may be an explanation of which portion of the reference is particularly relevant, to which claims it applies, or merely an "X", "Y", or "A" indication on a search report.

The examiner should indicate that the non-English language information has been considered in the same manner as consideration is indicated for information submitted in English and properly permit the German references to be made of record.

Respectfully submitted,



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Enclosure:

Appendix

Date: November 26, 2003

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>

APPENDIX

CLAIMS:

1. A cut-resistant article comprising aromatic polyamide microfilaments wherein the titer of the microfilaments is equal to or smaller than 1.3 dtex (1.3×10^{-4} g/m).
2. The cut-resistant article of claim 1 comprising para-aramid microfilaments.
3. The cut-resistant article of claim 2 comprising poly(para-phenylene terephthalate) microfilaments.
5. The cut-resistant article of claim 1 wherein the microfilaments are in the form of staple fibers with a length between 38 and 100 mm.
6. The cut-resistant article of claim 1 wherein the microfilaments are in the form of stretch breaking yarn or endless filament yarn.
7. The cut-resistant article of claim 1 wherein the article is a glove.